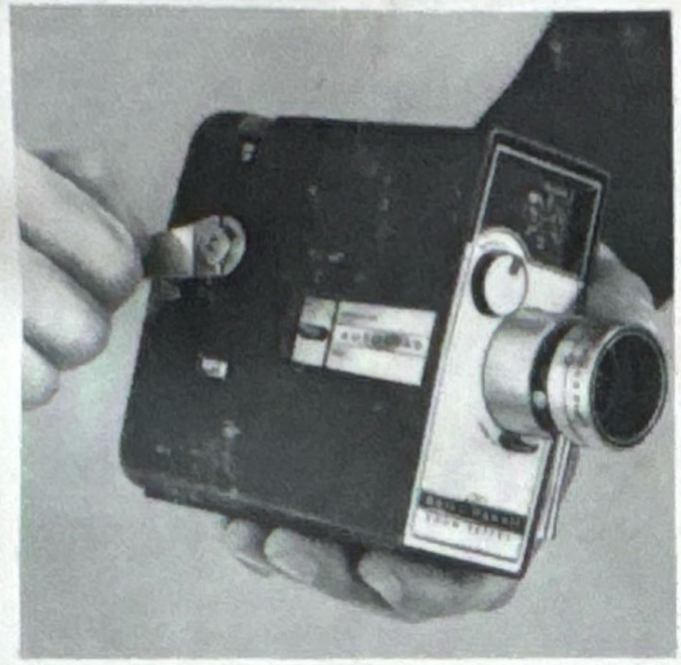
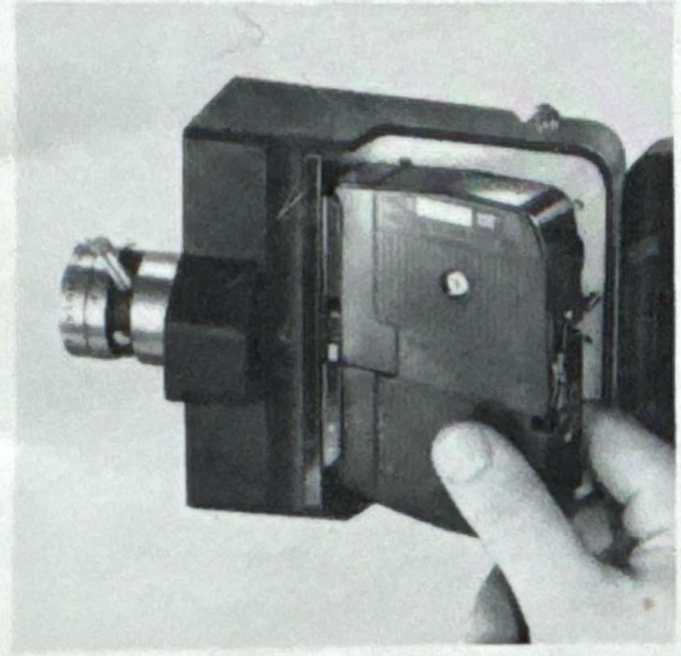
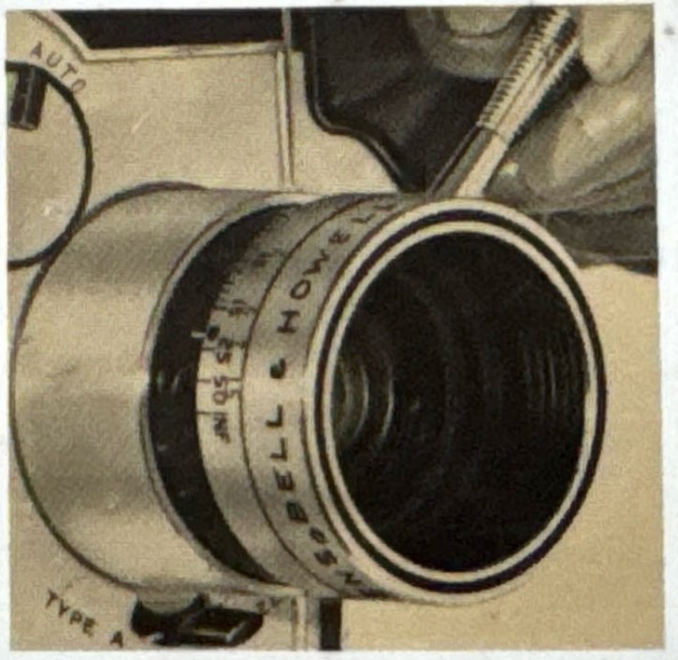


Bell & Howell

AUTOLOAD ZOOM REFLEX





8 mm 'Electric Eye' cartridge load cine camera

Instruction manual

Important **Fill in and post today**

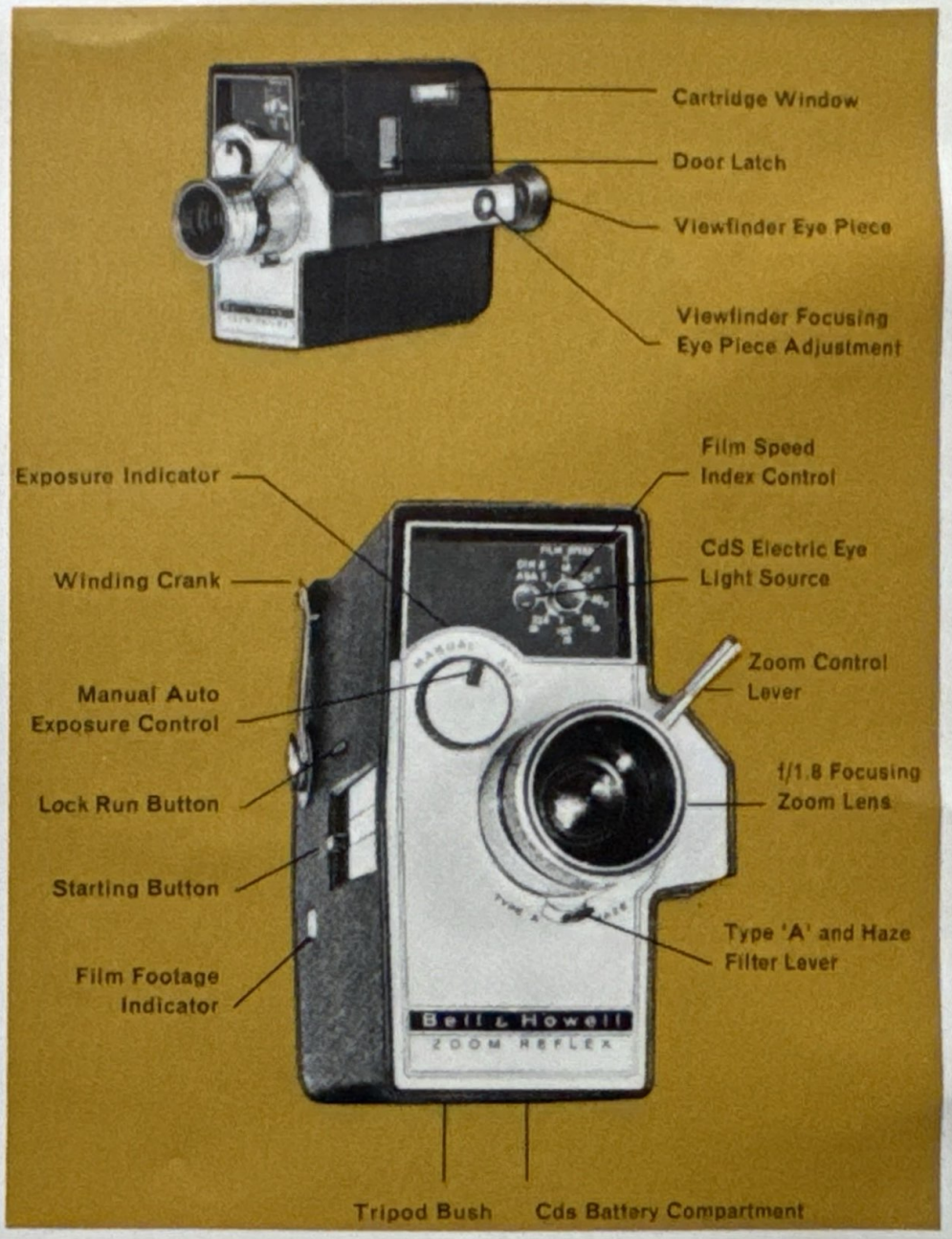
Make sure that your Bell & Howell guarantee is valid by mailing the accompanying guarantee registration card within seven days (U.K. only) from the date of purchase. Registration of your camera provides these advantages :

- Helps to locate lost or stolen equipment.
- Enables you to obtain the full benefits of our guarantee.
- Enables you to receive full service facilities.

The serial number of your camera will be found inside the camera door.

Introduction

The ZOOM REFLEX camera is manufactured to the high standards for which Bell & Howell are world renowned. To be certain of first class results from the very first use of your camera, please study carefully the instructions and illustrations in this manual.

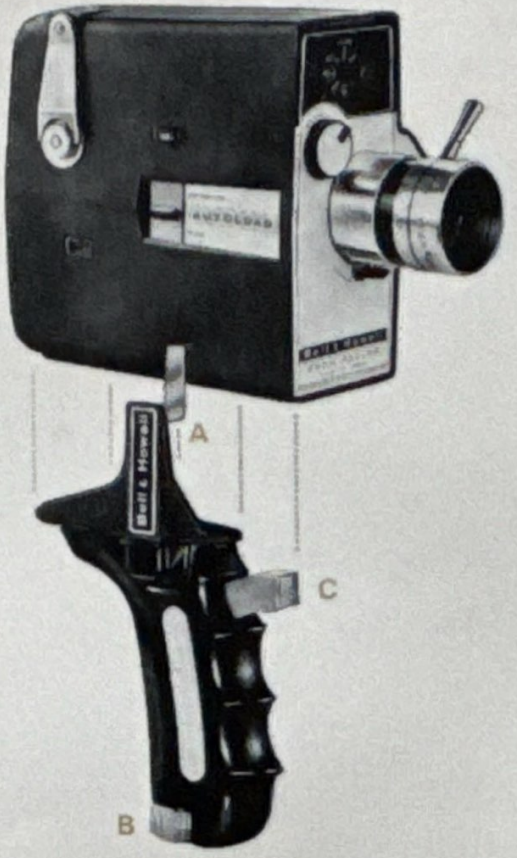


Get to know your camera

Before attempting those first exciting shots with your Zoom Reflex you'll need to get the feel of the camera as well as becoming thoroughly conversant with the positions and operation of the various controls.
Wind the camera motor as described on page 2.
Practise holding the camera in the filming position with your eye to the Viewfinder Eyepiece. Operate the Zoom Control Lever up and down with the left hand and watch the subject zooming, indicating exactly the picture recorded on the film.
IMPORTANT—make sure that you do not obscure the CdS light source.

Examine the Exposure Indicator, a red indicator needle within a transparent plastic housing above and to the left of the lens. Point the camera at a fairly strong light source and pass your hand across the Electric Eye light source. Notice that the red needle will move along the numbered scale in sympathy with your hand. This indicates the correct functioning of the Electric Eye when the Film Speed Index Control is set to any position. If the needle fails to respond check that the Manual/Auto Control is located correctly.

For steady filming always use the camera Pistol Grip (supplied as an accessory from your dealer).
Attach the Pistol Grip to the camera by locating the catch of the sliding arm (A) above the Starting Button as shown in the illustration and, while holding it in position, firmly tighten the large milled knob (B) at the base of the grip.
Grasp the Pistol Grip, with camera now attached, with the right hand, and Squeeze the Trigger (C) to operate the camera motor. Release the pressure to stop the operation instantly.
Note that single frame exposure is not possible with the Pistol Grip in position.



Winding

Hold the camera securely in the left hand, lift the Winding Handle and turn it on its hinge. Rotate the handle slightly until it locates itself as shown below. Then continue to turn the handle in a clockwise direction until a slight resistance is reached. The spring motor is now fully wound. Fold back the handle and locate

it in the groove at the top of the camera. At the end of the full run the motor will stop automatically to ensure that there is no variation in exposure.

3-Way starting button

Now that the camera has been wound the starting button can be tried in its three positions.

Normal Run

A light downward pressure on the Starting Button will start the camera motor and filming

is continuous as long as this pressure is held. Release the pressure and the motor stops.

If the camera has been fully wound, you can expose 10 feet of film, enough for 6 or 7 average length scenes.

Lock Run

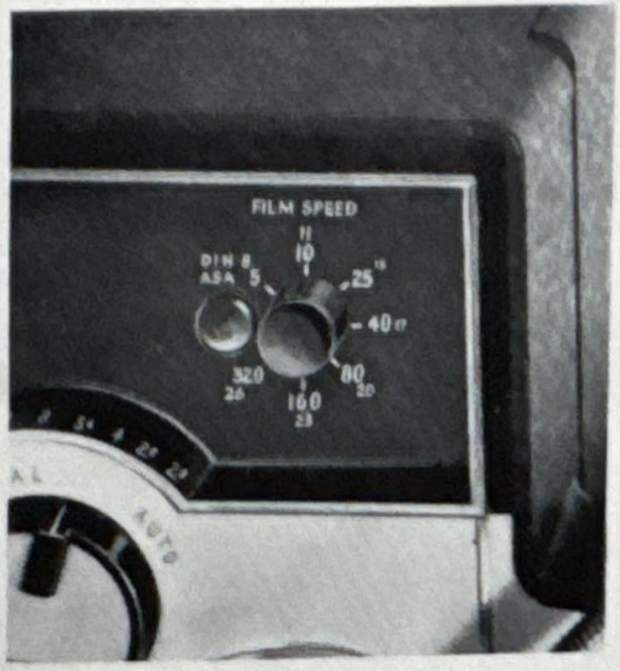
Depress Starting Button as for Normal Run and press the Lock Run Button downwards to lock camera in the continuous run position.
To stop the motor push up the Lock Run button.
When the camera is mounted on a suitable support, this continuous lock run allows you to get into the picture yourself.

Animation

Push the Starting Button up to take a single frame at a time. This is called a *single frame exposure*, and its application is described under this heading later in the manual.
An animation scene can give you unusual affects : For example, if you move a toy very slightly between each frame, it will appear to move when you project the scene. This operation is not possible when the Pistol Grip is attached.

Film speed index control

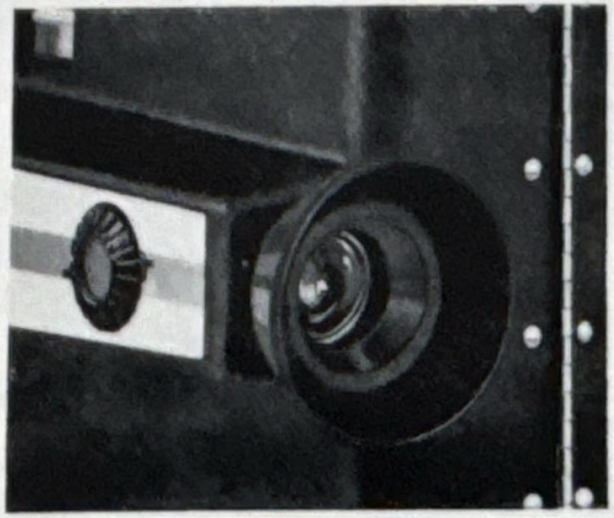
This control has seven settings : 5, 10, 25, 40, 80, 160 and 320, indicating the film emulsion speeds which are calibrated in the A.S.A. The film speed index number for the film you are using will be found by referring to the literature accompanying the film. Having determined the speed index for the film in use,



rotate the Film Speed Index Control until this number is opposite the white indicator mark. This operation may be carried out either before or after loading the camera.

Reflex viewfinder

This is adjustable to suit your individual requirements. To adjust the focus properly, follow these simple steps : Sight through the Viewfinder at a specific subject with the lens at full telephoto ; Set the Footage Scale on the lens to the correct distance between the camera and subject as described on page 5 ;



Turn the Viewfinder Eye Piece Adjustment until the subject appears sharp.
Your viewfinder is now adjusted to your eyesight and will provide sharp viewing at any distance or lens position.
Operate the Zoom Control Lever with the left hand and notice that the Viewfinder zooms in accord with the lens, indicating exactly the area of picture which is being recorded by the lens on your film.

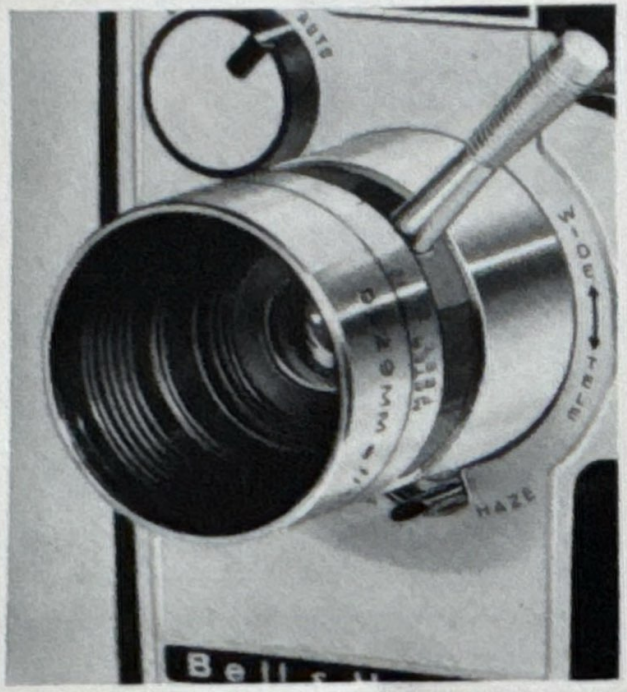
Viewfinder exposure indicator

When set for automatic operation the Electric Eye of your camera automatically adjusts the lens aperture for correct exposure according to existing lighting conditions. Should lighting conditions alter while filming—if a cloud

obscures the sun, or if you move the camera to film through alternately bright and dark areas, the Electric Eye will adjust itself to meet every change. If there is not enough light to produce a correctly exposed film, the Exposure Indicator Needle will appear in the Viewfinder—see illustration.

Zoom lens

Your Camera is equipped with an f/1.8 Focussing Zoom Lens which allows you to take normal pictures or, at a touch of the finger-tip, zoom-in for close-up, or zoom-out to take in a panoramic view. The secret of its



perfection is its high performance, fully colour-corrected optical system which ensures edge-to-edge sharpness at all times.

You will find the Zoom Control Lever is conveniently placed on the side of the lens mount for easy operation by your left hand—for normal shooting the lever position is horizontal. Push lever upwards to zoom-out to wide angle, or downwards for telephoto close-ups.

Wide Angle

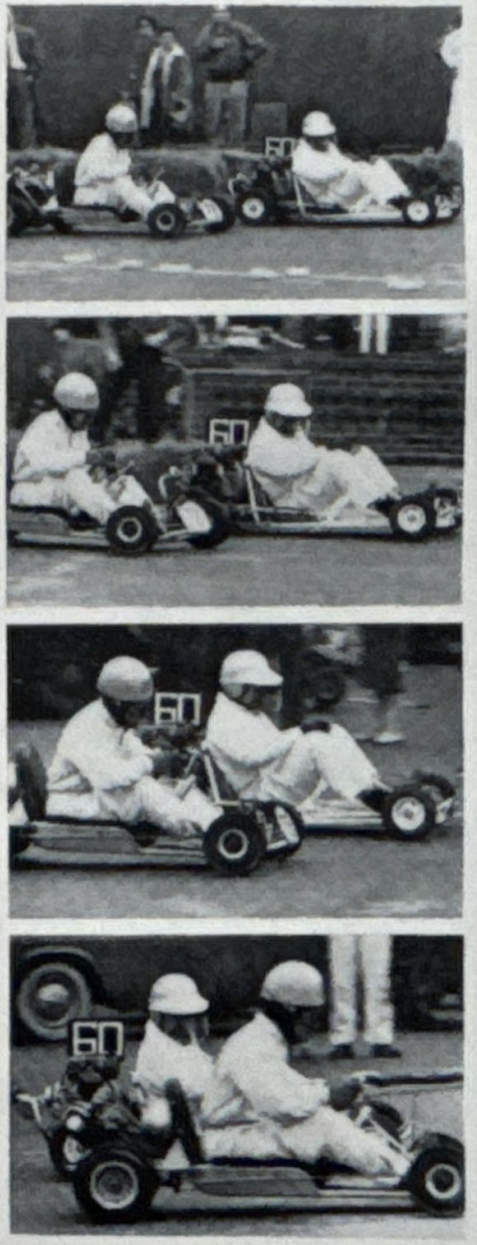
Zoom-out to cover greater area than normal lens, giving wide coverage when filming at close quarters. Ideal for panoramic scenic shots.

Normal

This is the position for most shots—following the action on holiday, at the school sports, in the garden, etc.

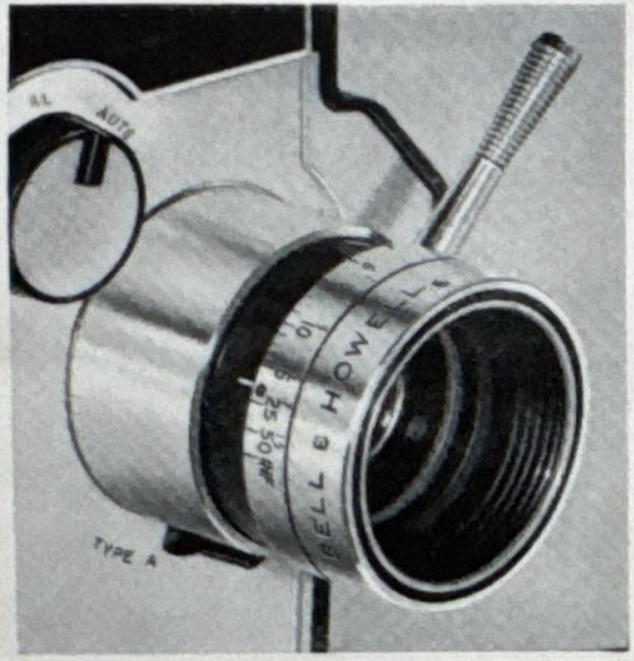
Telephoto

Zoom-in for telephoto shots. Perfect for the distant shot or for the 'candid' close-up to catch those natural relaxed expressions in fine detail.



Universal focus position

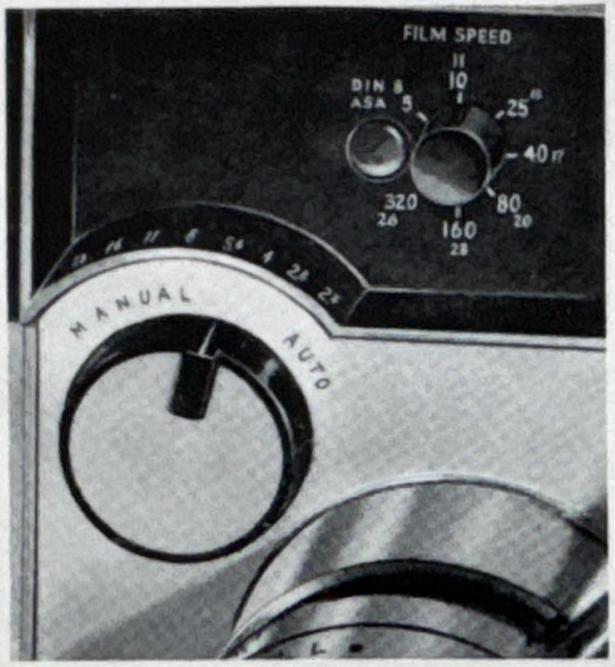
The Universal Focus Position is the black dot between 15' and 25' on the Focusing Ring. Align this with the White Footage Index Mark. This is the setting you will probably use most of the time. When shooting outdoors on a sunny or slightly overcast day, this setting gives a maximum focus range in front of and behind



your subject. When shooting indoors or close-ups, or when the lens is set at telephoto, turn the focusing ring until the correct distance from camera to subject is opposite the Footage Index Mark.

Auto/Manual Control

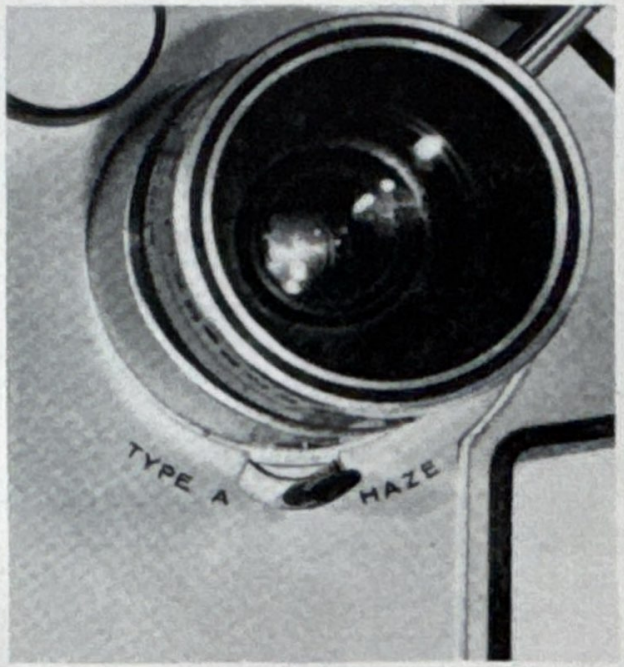
If you intentionally wish to over or under expose for special effects, the lens must be set manually to the required 'f' number. The 'f' numbers are shown on the scale of the Exposure Indicator, and are calibrated 2.3, 2.8, 4, 5.6, 8, 11, 16 and 22. A red indicator needle is visible through the window of the scale and must be lined up with the appropriate 'f' number required.



Move the Manual/Auto Control from Auto to Manual until the red indicator needle is set opposite the required number.
When changing to Automatic operation remember to make certain that this control is returned to the Auto position.

Built-in filter control

Your Camera incorporates both HAZE and Type 'A' filter. When you are filming outdoors with indoor film you must always use this filter. To bring the Type 'A' filter into position move the Filter Control Lever to the position indicated. On all other occasions the Filter Control must be set to the HAZE position.



A haze correction filter has been incorporated within the lens of this camera, thus rendering a supplementary Haze filter unnecessary. This reduces the amount of blueness experienced in some outdoor shots.

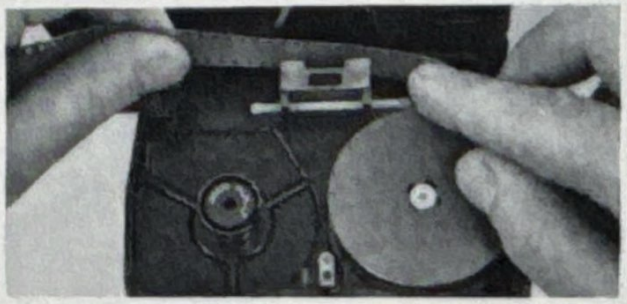
Film footage indicator

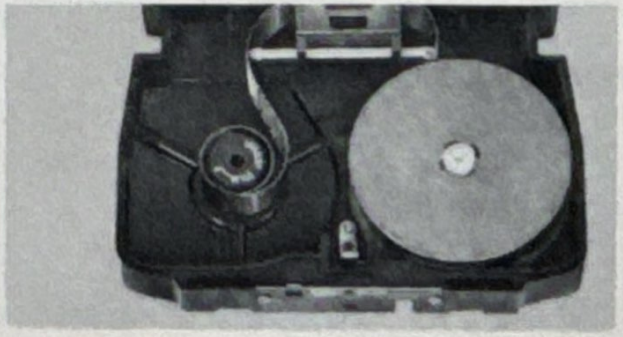
This shows how many feet of film you have used, and operates automatically while the camera is in use. The upper scale is calibrated in feet, the lower scale in metres. While watching the scale, press the Starting Button and run the camera until the '0' reaches the index mark. The film leader which protects

your usable film from being fogged has now been run off and the loading operation is complete.

Loading film

Open the camera door by pushing down the latch and remove the cartridge. Open the cartridge by pushing up (arrow) Side 1. Place the cartridge in front of you as illustrated, with the cover away from you.
Avoiding bright light, unwind about 4 in. of film, keeping it taut on the spool by grasping





the film on the spool. Drop the full spool of film on to the white spindle. The side of the spool with four notches should be up.
Place the film around the white guide bar, and then in front of the film pressure plate as illustrated (light side of film forward). Continue threading around the other end of the guide bar and insert the film, following the arrow, into the film core. The film, properly inserted in the core, extends about $\frac{1}{16}$ in. above the core and is loose around the core. Close the cover, and do not re-open until both sides have been completely exposed.
With pencil, write the ASA Speed on the film information labels on both sides 1 and 2. This is erasable but will appear on the camera door window when loaded in the camera. Note that '0' appears in the window where 'Number Shows Side Exposed' is written.
This information is useful for storing loaded cartridges. Insert the cartridge in the camera with Side 1 up. Close the camera door and latch by pushing latch up.

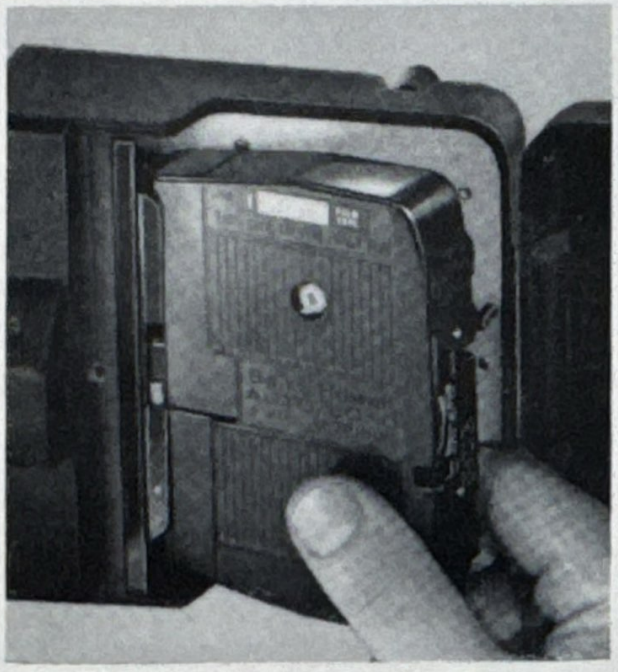
Important. Do not re-open camera door until Side 1 has been completely exposed. Note that Side 1 and the pencilled information appears in the camera door window.

Unloading

After you have exposed the first 25 feet of film as shown on the Footage Counter, wind the camera, and run until it stops. The automatic stop in the cartridge will stop the camera with the Footage Counter at 'End'. Open the camera door and remove the cartridge absolutely, do not open the cartridge. Note that '1' appears in the Side Exposed Window.

Using second half of film

To run the second 25 feet of film, merely turn the cartridge over and insert in the camera with Side 2 up. Repeat the instructions for Side 1. Do not open the camera door until Side 2 is completely exposed. After you have exposed Side 2 and run the camera until it has stopped on 'End', remove the cartridge. The number '2' appears in the Side Exposed Window,



indicating that both sides have been exposed and that the film is ready for processing.
Remove the film from the cartridge.
The cartridge should not have been opened before now.

Film comments

8 mm movies are actually taken on movie film that is 16 mm wide, and 25' long (useable footage). This film is then slit in processing and spliced end for end to give you a 50' roll of movies. To conform with ASA standards, 'leader' and 'trailer' footage is also provided. Part of this leader is used in the developing process, cut off and discarded.
It is necessary for proper operation of your camera that the film you purchase conforms to these ASA standards for length.
It is also important that the film you purchase is actually tucked into the slot on the supply spool. Film that is merely wrapped around the spool, will not take up properly on the second half of the film.
Colour film is available in two types ; for use outdoors in daylight (Type D), or indoors with artificial light (Type A). If either type is exposed under incorrect lighting without a suitable compensating filter, false colour rendering will result.

stop
don't
shoot

. . . until you have made certain that you have carefully followed the instructions on the previous pages regarding loading and setting your camera.

Making a film

Give your subject a little thought before you start filming. Plan a series of scenes to make an interesting picture story and try to judge how many feet of film each scene will need. To make your movies interesting, use at least 1½ feet for each scene.

While filming, imagine you are viewing the subject on a screen, and make each scene sufficiently long enough to appear attractive when projected. 1½ feet of film takes approximately 8 seconds to run through the camera at normal run (16 f.p.s.) speed.

Movie making— Automatic operation

If you have not already done so, set the Film Speed Index Control to the index number of the film to be used. Place the Type 'A' Filter Control to its appropriate position. Check that the motor is wound. Note the film footage as indicated on the Footage Indicator. Point the camera at a strong light source, pass the hand to and fro in front of the Electric Eye and check that the red needle moves on the scale while doing so. Sight through the Viewfinder Eyepiece and frame the subject, by moving the Zoom Control Lever to the appropriate position. Press the Starting Button to begin filming. The Exposure Indicator Needle situated in the Viewfinder will appear when there is insufficient light for correct exposure.

Colour reproduction

Try to avoid 'contrasty' lighting conditions such as bright sunny areas interspersed with deep shade. Flat, even lighting is usually the most satisfactory. Filming against the light is seldom successful and is not recommended.
NEVER FILM DIRECTLY INTO THE SUN.

Indoor filming

Filming indoors with your camera is simple, but you will require two or more photoflood lamps. These are specially designed to give brilliant lighting of the right quality when using Type 'A' colour film. Normal household lighting is inadequate for this purpose. The lower priced photoflood lamps must be mounted in suitable reflectors before use, while the more expensive types which have built-in reflectors can be used with a light bar which accepts two, three or four lamps according to the design and has provision for mounting the camera. The manufacturers literature supplied with the film gives suitable information on this subject. For more detailed information, consult your Bell & Howell dealer.

IMPORTANT : For indoor filming with photoflood lighting make certain that your camera is loaded with Type 'A' colour film. If Daylight type colour film is exposed under these conditions the finished film will show an overall orange colour. Type 'A' colour film, however, may be exposed outdoors with the Filter Control set to Type 'A' position.

Zooming

As you will see through the Viewfinder, the effect of moving the Zoom Control Lever from one position to the other gives the impression that the camera is gliding towards or away from the subject, according to the direction in which the lever is moved.

These zoom shots can be very interesting and effective when carried out properly but should be selected with care to avoid monotony in your film.

Avoid jerky or erratic movement while zooming as this is exaggerated on the screen : your Pistol Grip helps eliminate this. Similarly it is undesirable, except for certain special effects, to zoom too rapidly.

Remember that a valuable feature of the zoom lens is that it can be set to any postion between wide-angle and telephoto to enable the subject to be framed as desired.

Single frame exposure

Use single frame exposure for titling, animation, or when the position of the subject changes only slightly over a long period of time (sunsets and slow-moving clouds, for example) and you desire to speed up the action in your film.

Keep your camera clean

For first-class movies your camera must be clean. After using a complete spool of film, remove any collected dirt from the film gate inside the cartridge and inside the camera with a good quality camel hair brush. Never use metal or sharp tools. To remove dirt unaffected by brushing, use bone, plastic or wood articles. If you are filming on the beach, keep the camera covered while not in use and never rest it on the sand. Similarly try to avoid getting sea spray on the lens. If the lens does get splashed, remove the moisture with lens cleaning tissue or a soft clean cloth, immediately. When not in use your camera and film should be kept away from conditions of heat or moisture.

Depth of field with your zoom lens

What is 'Depth of Field ?' . . . It is usually referred to as that area in front of and behind the subject that appears acceptably sharp and clear. Objects in front of or behind the 'Depth of Field' or 'Depth of Sharp Focus' tend to become blurry.

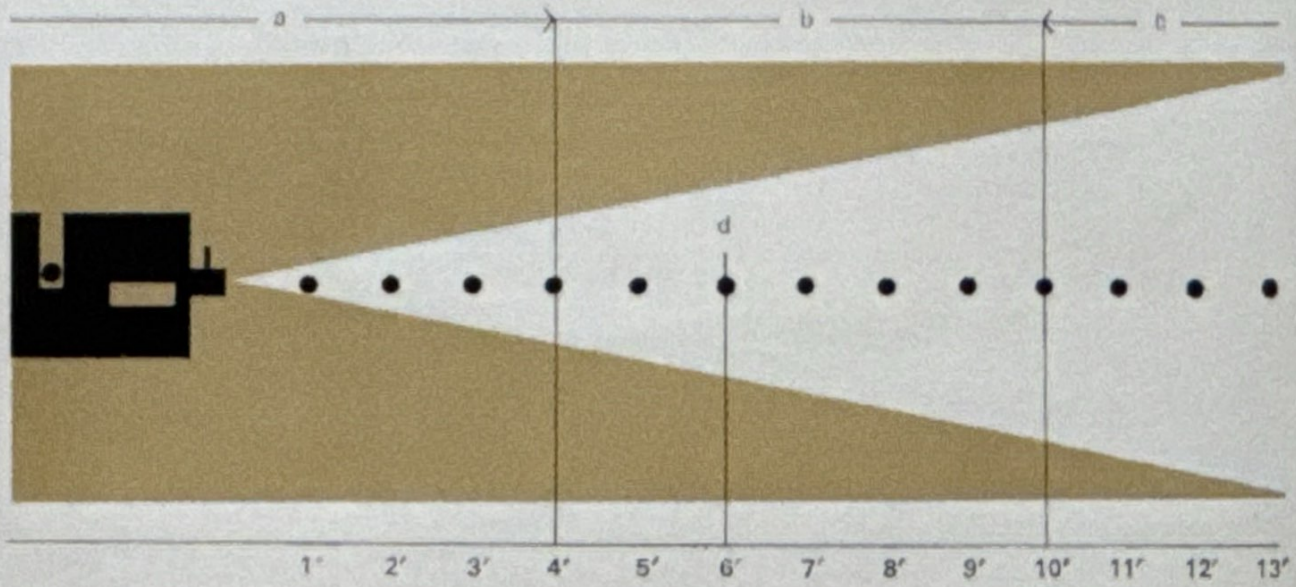
What determines the Depth of Field ? . . .
The Depth of Field is affected by :

1. The Zoom position of the lens.
2. The distance at which the Focusing Ring is set (distance from camera to subject).
3. The light condition.

In general, the more Wide Angle position of the Zoom Lens, further distances from camera to subject, and brighter light conditions all produce a larger Depth of Field.

Depth of field example

1. Zoom Lens set at Telephoto.
2. Sunny Light condition.



a Near Limit 4'.
b Depth of Field. (Zone of Sharp Focus).
c Far Limit 10'.
d Object focused on.

Depth of field at maximum Telephoto setting

LIGHT CONDITION				
Lens Focus Setting	Indoor Movies with Artificial light or very cloudy day	Cloudy	Sunny	Very bright (Snow-Sand)
3 feet	2′11″- 3′1″	2′9″- 3′3″	2′7″- 3′7″	2′3″- 4′4″
6 feet	5′6″ - 6′6″	5′ - 7′6″	4′ -10′	3′ -26′
10 feet	9′ -12′	7′6″-15′	6′ -27′	4′ -inf.
20 feet	15′ -28′	12′ -55′	9′ -inf.	6′ -inf.

Bell & Howell
8 mm film cartridges

Make the most of the cartridge load feature on your camera - always take some spare loaded cartridges when you go out filming ! Pocket-sized, light and compact, extra

cartridges cost so little. And they're available from Rank Photographic dealers everywhere.

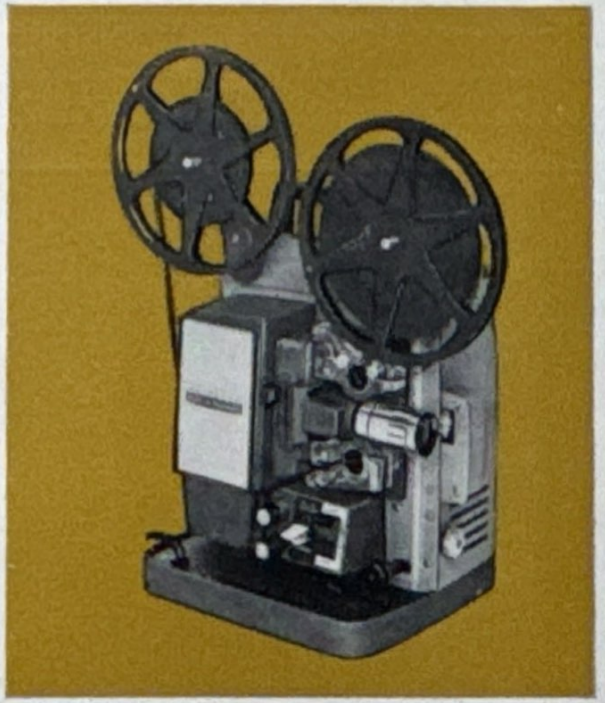
Da-lite screens

Perfect projection calls for a perfect screen Use a Da-lite screen to see your films to the very best advantage. They are made in a variety of sizes with superfine beaded surfaces. Ultra-fine glass beaded projection surface

stays **perfectly flat always** . . . guarantees sharp undistorted viewing.
Da-Lite Flyer matt white or glass-beaded
40″ x 30″ · 40″ x 40″ · 50″ x 50″

Bell & Howell Autoload II
8 mm projector

The perfect partner for your Zoom Reflex camera. Light output from the revolutionary 'Dichroic' lamp gives a new brightness and colour. Completely self-threading—



reverse or still projection—slow-motion—motor-driven rewind—variable speed—self lubricating mechanism—embodies its own smart carrying case

RANK PHOTOGRAPHIC

THE RANK ORGANISATION · WOODGER ROAD · LONDON · W.12.

AUTOLOAD ZOOM REFLEX

SUPPLEMENTARY NOTES ON CdS METER

The CdS photo-electric cell incorporated in the camera is powered by a small battery (Mallory RMIR, Ever Ready E1, or equivalents) located in the battery compartment at the base of the camera. This battery has an average life of approximately one year. When it is exhausted the Exposure Indicator Needle will fail to respond to the influence of light, or will move very slowly.

To replace the battery, unscrew the battery compartment plug by means of a coin. Note that the battery is positioned in the well of the plug with the positive contact downwards. Discard the exhausted battery and replace with a new one, observing correct polarity, then insert and secure the plug with battery in the camera base.

The battery can be disconnected, if necessary, by turning the Film Speed Index Control until the white indicator mark is aligned with a similar mark adjacent to the small lens of the CdS cell. Always remember to check that the Film Speed Index Control is set to the correct film emulsion speed each time the camera is used.

Note that the intermediate settings of the control are provided but not marked. When using film with an A.S.A. index not calibrated set the control at the nearest intermediate position; for example, with 16 A.S.A. film set between 10 and 25.